

## C60 POWERS UP MITOCHONDRIA TO STRENGTHEN YOUR MUSCLES & BRAIN – IAN MITCHELL – #882

Dave Asprey:

For 10 years across a thousand episodes and a quarter billion listens, my podcast has elevated what you knew about the capabilities of your mind and body. And because we're at the 10-year anniversary, I'm evolving Bulletproof Radio even further in my plan to upgrade humanity, and I'm evolving myself as well. I invite you to expand your knowledge, explore your performance and embrace your possibility with The Human Upgrade.

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And I changed the name of the show as we're heading up towards a thousand episodes, because The Human Upgrade is about upgrading everything, not just what you eat. I love nutrition, I love supplements, I love science, but there's a lot of stuff you can do with how you act, how you behave, what you choose to do, how you meditate, and all those other things.

It's the system of the human, and it's more than just disrupting big food. And on that note, today's episode is with a friend and research scientist named Ian Mitchell, who has been on the show before. I think I can safely say this. He's a weird dude. And that he's a ridiculously prolific inventor and pharmaceutical developer. And one of the reasons I like him is that when you have enough of whatever jeans or being dropped on the head, I'm not really sure.

Ian Mitchell:

Both.

Dave:

That it causes you to be a crazy inventor, you just come up with crazy stuff. And I am speaking lovingly because I have the same problem, where I can always make more stuff than I have time to actually follow through on. But you've actually followed through on quite a bit of cool stuff.

And we've talked about longevity, inflammation, cancer, hair regrowth, and your quantum charged particles that you actually measure with real scientific stuff instead of saying, "This feels very quantum, it's a quantum unicorn." And so, you and I have both made fun of quantum unicorns. But I hear you've ridden a quantum unicorn at Burning Man, is that true?

Ian:

That is right. And I'll be doing it again this year. It's slightly larger. Yeah. And I'm giving a complete educational takedown on how you actually build a quantum unicorn. So, it's going to be fantastic. You should come, you'll love it.

Dave:

And Ian, if you haven't figured it out here, takes no crap, and he just gives it right back to you. We're going to talk about Carbon 60 today. This is something that rat studies came out in the late '90s, around incredible, almost doubling of the lifespan of mice. Not just making them healthy until they die at a normal age making them live twice as long.

So, of course, I spot some of the first stuff on the planet and started trying to use it. And noticed, it made me feel like absolute crap. And in past episodes, we've talked about why that happened. But these molecules called lipofullerenes are really interesting for the energy that your body makes to be you that's part of that human upgrade. What if you had a bigger power plant in there? And then, longevity as well. So, Ian, welcome back.

Ian:

Thanks, Dave. As always, I'm happy to be here. I try and show up at least on average, one out of every 250 episodes you do, so keeping it up.

Dave:

Alright. Yeah, we've got to keep that that thing up. Otherwise, how would we have the latest and weird stuff?

Ian:

Yeah, and this is definitely, we have the latest in weird tech, that is for certain. So, actually, some of it was at the upgraded conference. I think I did an interesting little lecture, where I showed a quantum device, and you're of course, familiar with the derma roller test, where you do a dermal stamp, and someone has a histamine reaction.

And at the conference, one of the companies, [Lila Q 00:04:59], I'm on their scientific advisory board, and they asked me to demonstrate that their quantum device actually did something. So, I brought someone on stage who had a really, really bad allergy to crab. And we took a little packet of crab, and opened it, derma rolled their arm, got a huge histamine reaction blew up.

And then, I put it in the quantum block, which is just plates, metal plates, seemingly just metal plates. But it's actually been tuned, the frequencies have been tuned. And then, we took it out, and derma rolled the other arm, put the crabmeat on that from the same little container, no histamine reaction. And literally, every single person in the entire auditorium walked up to look at the guy's arm.

Because it just didn't jive. It's not typically something you see. But it's measurable. It's quantifiable. We have dark field microscopy images and shots of that. And that's the kind of stuff, it's like you said, it's the weird stuff. But that's the cutting edge. It's where we get to make the biggest change.

Dave:

There was a guy, who I don't think was exhibiting at the Biohacking Conference, but he came out and he said, "I have this t shirt that changes how you move." And I'm like, "Really?" It's not one with stretchy compressions up. It's just a frickin' t-shirt.

Ian:

Really?

Dave:

So, I said all right, but I've held it, and he'd do a muscle testing thing. He goes muscle testing has validity, but it's also something that is subject to operator error. So, if you want something to happen, and you're pulling on someone's arm, you'll pull harder. And it's one of those things that's directionally accurate, but is subject to human interference.

So, like all right, this doesn't work, but then I took the same shirt to another guy I really know and trust, who's highly intuitive, who was on stage, John Amaral, who's also been on the show. And he said, is that one of those shirts that does that stuff? I tried it, it doesn't make any sense. But they say it's a new kind of material. So, guys, here's the deal.

My scientist right away says that's bullshit. Okay. It doesn't work because there's no mechanism of action. Have you guys ever heard this? That doesn't work because it can't. Now, what a real scientist does, and what I did is said, "Okay, maybe there's a mechanism of action that I don't understand. Therefore, does it work or does it not work, regardless of whether I think it works?" And that's actual science. And so-

Ian:

That is the actual science.

Dave:

I'm still not sure about the shirt. But I'm willing to consider it. The quantum block thing you're talking about, it does seem like they've got some good evidence behind it.

Ian:

Yeah. There's a ton of dark field microscopy. The thing is, if you want to be a good scientist, you follow the data. And you have to be just open to going wherever it takes you, and not have any preconceived notions. If you have some preconception about what you're going to see, you have, of course, impacted the outcome of the experiment. And it's basically bunk.

You shouldn't do that. You should just roll on, and be completely open, and see what's actually going to happen, and where it takes you. The stuff that we're playing with today, initially, the Carbon 60. And I've told you this, as friends, I've told you this before. When I saw that first study come out, I thought, "Total bullshit. No way." Because something literally doubling the lifespan.

And I thought, eh, but I was intrigued. So, I ordered all the equipment, a centrifuge, just got everything, and I started making it. And I took it initially, and I thought, "Damn, I feel great." And so, then I did another mouse study, and I used p53 knockout mice, and got a 93% lifespan extension, and no tumor burden, which p53 is the tumor suppressor mice.

Their tumor suppressor gene is extracted. And it was such a bizarre result, that it set me on a very different trajectory. And for years, I worked on that. But then, the stuff that I'm doing now with Wizard Sciences, what I wanted to do is I wanted to say, "Okay, this is great as a starting point, but how much more can we do?" And so, I started looking at in terms of just blocking oxidative stress load inside the mitochondria.

That's fantastic. And I've been doing that for about a decade now, a little bit more with myself. But that's just one component. So, you're blocking system loss, but if you really want to amp it up, then you go to the other side of the coin and you say, "Okay, how can I additively put something more in?" So, I started doing things like an imine coupled with resveratrol and CoQ10.

So, I could start isolating all the different components of the electron transport chain and maximize the entire thing. And do two-in-one activation, upregulate everything, drop inflammatory

responses, and in some cases, using some exogenous ketones, and a few other things. Actually, looping segments of the electron transport chain so I could buffer in one area, and then pull the electrons back, and dump them where they needed to go.

And that's been fantastic. One of the things I made was for the guys doing Olympic trials last year, or this year, actually. And I called it the Olympic serum because Olympic athletes are going for these crazy, crazy small increases little gains, 1%, 2%. And the guys that I was working with, and I'll send you some pictures of it because it was hilarious.

They were doing pole vaulting, or as I called it reverse limbo. And so, I would send them the stuff, and their results, they started getting 13% to 17% gains. And it was blowing them away because it gave them an entirely different competitive edge. So, that's the crux of what I've been working on lately is figuring out how to bolster all the different sides of this, so that you can end up with the most robust energy system in your physiology.

Dave:

We're at the point in society and in research now, where we can freely stack things to see what works, and we can get enough data quickly enough, and we know enough mechanisms. If you went back 10, or 15, or 20 years, it was a lot harder to do this. And you could say well, take your magnesium, calcium and zinc at the same time.

But it feels like we have so many more tools now, even in just a brief period ago that I think it's now time to do what you're doing. And you're playing around with a molecule that we only really discovered. When were lipofullerenes discovered, like '80s or something?

Ian:

Yeah, the fullerenes were 1985, and then they didn't really start lipolyzing it. Originally, they didn't think it was going to work in biological systems as anything other than a carrier. But then, when people started lipolyzing it in the '90s, the late '90s, they realized, "Well, wow, this is something that we can actually get in cells." But a lot of people had your exact experience.

They took it and they didn't feel good, but the problem therein, is that if you don't know what the hell you're doing, you're going to end up with problems. There was a big paper that just got published, incidentally, by some guys who tried to license my patents while they were working on this paper.

Dave:

Saying it doesn't work well trying to license it. They must work for the American Medical Association. Yeah.

Ian:

Obviously, no one in pharma would ever deceive anyone. Yeah, because that would never happen. So, they published this paper saying that there were all these problems with it. And it's so easy to skew data. I could make this stuff absolutely lethal. All you have to do is combine it in a high oxygen environment with the lights on. It's very simple to screw it up.

Dave:

Ian, come on man, 99.98% of data from the government is not skewed.

Ian:

Yeah, it's exactly right. Dave, I wanted to talk to you about the food pyramid. I just love it.

Dave:

I trust those guys with my health. Yeah, I'm with you.

Ian:

Absolutely. Ice cream is a great health food, just saying.

Dave:

So, you had some pharma guys looking at yourself going, "This could be amazing." And the same type of thing, "If we can't get it, we'll stab you in the back," which is really common in that business. There are others like that, but because of the regulatory nature, it's there. So, what you're doing is not pharmaceutical at all when it comes to C60. The Wizard Scientist is just doing it. But what's different, because we talked about C60 a while ago, what have you changed in it?

Ian:

Well, what I really started looking at was, instead of initially what I was doing, we did it with animals, and then we did it with people. And then, I left, and started my entirely own shop to really optimize things. Because what I wanted to do was absolute peak performance. That's why I started working with Olympians and guys like that is because I thought, "How far can I push this?"

I sent you some of the work that I've done a couple years ago, where we're pushing mitochondria to the point where they pop because they're just potentiating so much electron flow across the membranes, and you don't want to do that. So, the work around there, as you add in PQQ so you'd get mitogenesis. And you can distribute the load across a larger number of mitochondria.

So, the whole crux for me now is to say okay, if I want to absolutely end up with the best thing I can do, at least right now, this is this truly is the best thing I figured out yet. Hopefully, I keep doing things and optimizing, but taking both sides of the cycle, blocking loss, and then additively putting things in. And that's the big difference.

Before, I was just blocking loss, which is great because it yielded 18% of 58.3, I think were the numbers of the jump in ATP output intracellularly, which is huge. But it's certainly not the limit. I've punched way past that now. So, the thought was, "Okay, well, that's just what we're losing. Now, let's go out, and actually get some, and earn it, and try and up the system." And that's what it does.

And the difference is remarkable. In terms of neural function, a couple of people, my friend [Molly Maloof 00:14:36] had tried it because she had a TBI, and she tried one of the serums, and it wasn't even on the market. It was something that I've just been researching and had in house. And we actually put it out for people to purchase because she started posting about it because it made such a profound impact on her and cognitively boosted her system a bit.

And she thought it was... I think she said the closest to limitless, which was fantastic. But I didn't really have any systems up, I've just been in research mode. So, we very rapidly shifted from research mode to actual production mode, and started putting it out so people could pick it up. And then-

Dave:

This was the lipofullerene that when you've invented it, you have the trademark on it. But this is when instead of using olive oil to hold the bucket balls, you're using all of squealing. Can you talk about-

Ian:

Actually, no, on this one, this is interesting-

Dave:

No? That was a different one. So, which one was that? Good God, well, you keep coming up with those.

Ian:

So, here's the guy here. It's the one with all the handy dandy brains, caprylic acid, my friend.

Dave:

You sent me some of that years ago.

Ian:

I did. I did. Yeah.

Dave:

I remember talking about whether you could do that. That's cool. So, that was what it was.

Ian:

So, I went back, and I used that, because there were a bunch of guys experimenting with it. But I went back and thought, "Okay, if I really want to up neural function, how do I do it?" And so, I combined everything I could to drop inflammatory response. Personally, I have this belief about the pathogenesis of some very, very odd pathogens in the brain that might result in diseases that rhyme with Alzheimer's.

And I think if you address that, I think it's actually a protective mechanism for the body, and it just goes unchecked. And hence, you end up with long-term degradation. So, knowing that, I thought this is probably something that's affecting me now. So, if I can address those issues now, I'll do a lot better long term, mentally.

Dave:

A study just came out this week that said that they're now able to see a couple of decades before it happens-

Ian:

Not at all surprising.

Dave:

... and there's immune system reaction to it. Yeah, that's probably bacteria presenting something, the immune system tries to get rid of the bacteria, and then it ends up going-

Ian:

Yeah. And it's a question just like you would with something that changed your pH, you sequestered in around your midsection, and it pumps into your omentum and stores as fat. Similarly, your brain appears to do the same thing with any sort of exogenous pathogen that comes in, whether it's heavy metals, or glyphosate, or virus, or bacteria.

Just so it doesn't ding you, it seems to enshroud it in amyloid plaques and tau proteins. And so, I included things in the neural formula that would actually go in, and break that stuff down into small particles, then stimulate the glymphatic system during night to purge it out. Use interstitial fluid, and cerebrospinal fluid to wash it, and then drop the inflammatory response so that over time, it would recondition the brain. And it's been going quite well. So, I think people cognitively are seeing a lot of benefit.

Dave:

All right. What is that stuff even called? You sent me a bottle of it a while ago-

Ian:

Neural Rx?

Dave:

What Rx?

Ian:

Neural.

Dave:

So, Neural Rx from that Wizard Sciences, your company, you do all these crazy things.

Ian:

Yeah, that's under the banner of Wizard Sciences. It's cool because I get to play with all the ridiculous stuff, like the gamma shielding I'm doing with the NASA guys, and all sorts of craziness. It's just fun for me. And when you don't make it too terribly sciency, people don't get wigged out. I'm just trying not to take it too terribly seriously.

Dave:

Yeah. You definitely are playful in the stuff you create. But there are some studies out here. And one of the things that I've always been interested in that I've not really talked that much about is myosin in the body. Now, myosin, if you guys have ever seen one of those pictures of the most ripped rat or the kangaroo that's just all muscle. They're using technology to knockout genes so that those animals have tons and tons of myosin in them that they put on muscle like you wouldn't believe.

Ian:

Yeah, myosin knockouts, they're like bowls-

Dave:

Yeah, myostatin knockouts.

Ian:

... they're absolute super ripped, shredded balls, which is-

Dave:

Yeah, the balls, yeah.

Ian:

... my ballish figure.

Dave:

Right. Of course, the balls, in fact, I think they were the first ones there. But I've seen it in multiple animals now, and it's ridiculous. So, bodybuilders forever have been saying how do I control this myosin? And well, it looks like you have a study on your fullerenes, and atpAs, and muscles.

Ian:

Yeah. There're some interesting things that go down there that I have cautioned people about because the way I figured this out, and I'm sure I've probably mentioned it before was by pulling my muscles in my back, and tearing my hamstring twice. Because you are able to activate so much skeletal muscle, that you're not normally able to do that.

So, it creates a function called super precipitation of skeletal muscle actomyosin. Basically, it's in training all of your sarcomeres, and those are the little muscle fibers. And so, in terms of changes to your actual musculature, it doesn't have the appearance of much. But in terms of skeletal muscle activation, the recruitment goes off the charts.

And the problem is, it's a dose dependent curve. So, one of the studies that came out showed a very dose-dependent curve to that. And so, you can do these ridiculous Captain America lifts and things like that. Problem is, chondrocytes, you don't really pump out enough ligaments and tendons at the pace you need to keep up with muscle recruitment that's suddenly a two, three, four X factor.

And I'm the poster child for the silly injury, where I ended up on the ground, literally holding my back as I cracked up, because I realized what it was and remembered that study.

Dave:

It's funny, you and me both have had this problem for different reasons. I've talked about this just on the last episode with, I think it was with Chris Shade. A few years ago, I put on 29 pounds of muscle in six weeks and-

Ian:

I remember that.

Dave:

... if the chondrocytes are the cells that are making bone and connective tissue. So, what's going on there is literally, you can put on muscle too quickly. So, it's not really about the muscle. It's about the connective tissue. And if you do Qigong or Neigong, which is even better than Qigong for that kind of stuff, or Tai chi, or even some forms of yoga, you can get really strong ligaments. And you ever see those weird Shaolin guys, who can do a handstand on one finger without any muscle mass?

Ian:

Yeah.

Dave:

It should be impossible. That's the other stuff. So, can you make the chondroitin strength formula for me? Because I want that.

Ian:

I think that's something you probably have to do with lasers. Which actually, I really do. We've been working on-

Dave:

Shouldn't you do this when you say lasers?

Ian:

Laser, you're right, exactly. I'm going to go hop in my Bob's Big Boy rocket shortly. Yeah, the thing with that is I've been playing with that a lot. And I've done, I think, five different stem cell procedures or using VSELS, the Very Small Embryonic Like Stem Cells in the lab here. Because those things are aces, man. After having COVID, I had myocarditis. And I could not function well. My heart was just super impinged. And after the-

Dave:

You should have called me. I know to hack that.

Ian:

Yeah. It was a bitch, man. I tried quite a few things, and I ended up going back, and doing the VSEL thing. And I did, after the third procedure, it was a night and day difference. I was able to run up flights of stairs, as opposed to literally having to stop after one flight, catch my breath, and then schlep myself up to the second flight.

So, I'm a firm believer in that, but the real crux of that is, is actually using lasers to simulate things. Because you and I have talked for years and years now, humans are not just muscle and bone. We're this aggregate system with photonics, and chemicals, and biochemical interactions, and magnetics, and electronics.

You can really do an amazing amount of stuff, if you're willing to tap all of the available resources now.

Dave:

And some of what you're working on here with C60 can help a lot of people.

Ian:

We're these multivariate complicated creatures that need things that address multiple components. That's actually why I like the lipofullerenes is because you couple it with different lipids to activate different components in your body. So, if you want to get some sirtuin activation, you'd bind it with oleic acid or olive oils base.

If you want to get something to your brain, you bind it with caprylic acid or just the straight MCT. You let the body do the heavy lifting, you just provide it with the tools it needs and all the different components. And then, the inherent intelligence of the body does the rest.

Dave:

It's so important, you just have to power it, and get stuff out of the way. And I look at C60 as something that short circuits parts of the power generation, the mitochondrial membrane. So, it just makes power more easily. And when that happens, and there's excess energy leftover after you didn't get eaten by a tiger or after you dealt with things. And after you handled the highest-level biological priorities, then you get into, "Oh, I guess I could repair my DNA."

Because it didn't really matter right now. But since I had extra capacity, I could do it. And I think that's why you see such a long rat life extension. But one of the big questions here is what happens with bioavailability? Because the issue has always been with this stuff that it's not very stable, and you can't get into the body. So, what are you doing at Wizard Sciences that's different than... there's 25 brands of C60 out there?

Ian:

Yeah. There are... well, so-

Dave:

Yeah, varying quality and whatnot.

Ian:

It's very true. Well, my thing has always been trying to figure out, like you, how to hack systems to upregulate things. And so, it's truly, I always joke, it's like having, you don't need 16 pounds of grape jelly, you don't. If food is outside of your reach, it's not going to benefit you. And the same thing. I've tested a bunch of the different C60s.

And you see that when people lipolyze these, it has the appearance of having a high bioavailability because you think it's actually ducted inbound, but it's not. And the way you can really test for that is you pop the thing in a centrifuge, and you see what really is going on. And so, we shifted the entire process here. I had been doing it the same way for the past seven years.

And then, I completely flip flopped it because when I started doing the studies to see what happens, how much is actually here, and what difference you can tell at, like in terms of how much is actually there that is available for you because it's hydrophobic. So, unless it's lipolyzed, it's not happening. You're not getting it in. And unfortunately, it very easily has the appearance of being lipolyzed.

And you don't actually know that you haven't attained that until you start doing things like centrifugation and actually, trying to forcibly break it down, and looking at amylases to see what can separate things. And after you do that, it's not that hard to go back and figure out, "Okay, where in this part of the process did I go awry? What was I not counting?"

And that's exactly what I did when I started this. I thought okay, what I did, I thought was the best at the time, and it and arguably hopefully was, because I think a lot of people derive a lot of benefit from it, which is why I do this stuff. But now, it's just upregulated. And I don't necessarily want to disclose exactly how I revamped the whole system to do that.

But it's very easy. If you took my stuff, and you took the stuff that I've been doing, and you looked at them side by side, and you simply ran it through a centrifuge, you would see a market difference almost instantly.

Dave:

I 100% believe you there. You're a trustworthy guy from my experience, you don't BS about the science you never have.

Ian:

No. It's because truth is truth, man. It's so easy to show.

Dave:

How would one using your C60 avoid having muscles so large that they pull off the bones? I'm serious. I did not like it when they do that.

Ian:

Okay. No, I know you are because I jerked my hamstring twice. I had a ginormous bruise where I tore the thing, and then I pulled the muscles in my lower back apart. Yeah, no, that's a very legitimate question. Follow the dosage recommendations. Do not do what I did. Because I did that stuff when I was doing a high-dose regimen to see what the threshold was.

And because it follows that paper that I sent you, it's a dose-dependent curve. So, the higher the dosing, the more sarcomeric activation you get, the more your muscles are going to fire, and the higher the propensity for them to cause damage to the tendons and ligaments. You got to dial it down. Just use it as a benefit for your body. Don't use it as something to supplement.

Actually, there are a couple of times where I think it would be good to do that. But generally speaking, unless you're some high-end performance athlete, follow the recommendations, do two teaspoons a day max, enjoy the benefits, you'll feel like a champ, you just won't hurt yourself. Because if you go too far, you really do, the moment your muscles potentiate, and you get the signal of fire.

If you have a total recruitment, that generally doesn't happen unless you're having a fight or flight response, where your brain overrides the capacity for your body to downregulate it. Because normally, you only potentiate 25% to 30% of your muscles when they fire. Your recruitment is about 25% to 30%. If you're in fight or flight, you can go 80% to 100%.

This will bypass that on a dose-dependent curve. So, the dose response curve, if you suck that stuff into your system like I was doing, like a bottle a day, don't do that thing. It's too extreme. Just follow the dosing recommendations, capita two teaspoons. If you got something super, super difficult that you've got to do, do a tablespoon. Otherwise, just call it good and rock on.

Dave:

One of the things that I'm interested in is recovering faster than mother nature wants you to because mother nature actually is not that interested. If you're injured, it's probably because you're weak, and someone else should be able to reproduce instead of you. Hey, that's just the algorithm of evolution. So, given that I don't like that perspective, and I want to recover faster than I should. If I take the Olympic Rx stuff, and I'm barely exercising, or I'm recovering from an injury, does it help?

Ian:

Massively, right? Because recovery from an injury is about energy in the system. And if you have, let's say you're providing the same number of calories in, you're getting the same input. But if you're 30% to 70% more efficient, it's an entirely different ball of wax. Your body is going to have the ability to throw energy at whatever needs to be repaired.

And you and I know Marcella [Madera], and when she started taking this, that was the thing that threw her a little bit was she needed, she said roughly 30% fewer calories in the day. Because if you're not going to exert more, your system just suddenly became more efficient. And you can use it for thinking, for healing, for moving. You just have higher access to the energy onboard.

Dave:

That is real science. And most of what I talk about with the whole Bulletproof Diet, all of the biohacking is around that equation. So, do a better job of turning error in food into energy. And to do that, you'd have the right building blocks. And then, if you have enough energy, you can do stuff that you didn't think you could do. And that's pretty cool.

Ian:

Well, one of the big ones here is also inflammatory response. Because when you drop cytokines, which is just a side effect of this, your body functions more effectively without all the inflammation.

Dave:

It's a powerful intervention. I do notice that you just need less food when I take it, for sure. And these are signs that things are working.

Dave:

So, what's different between your neuron formula and your Olympic muscle formula?

Ian:

So, one is working on somatic cells throughout the body, and the other is literally working on neural cells. And so-

Dave:

But what's different? They're both Carbon 60, right? How different could they be?

Ian:

No, they're both Carbon 60, but it's the delivery. So, if you take Carbon 60, and you bind it to a lipid that's going to get it past your blood brain barrier, and drop it in your brain in the form of beta-hydroxybutyrate, great. Then, you've fractionated the right way. It's like lining up billiard ball shots. When you're playing pool, you want to make sure that you get it to go in the right pocket.

And all of that is dependent on using the right lipid. Your body really is very brilliant in terms of how it breaks things down and redistributes things. So, the difference there is the base oils. So, if you put it in the right lipid, you get it a clear right spot. So, to stimulate neurite outgrowth, you want to end up with a preponderance of your C60 going past the blood brain barrier, and dropping around your neurons.

And it actually is really peculiar, and you've got that study. But the thing that's the strangest to me is the morphology of the neurons shifts. You end up with these very, I call them super neurons, from

the central neuronal body all the way out to the axon. You end up with this really crazy long axonal span all the way out to the dendrite, and you've got 2X to 3X. And it's cited in the studies there.

So, you've got something that's this very large thing. And I always joke that it's like the patch cord, where you're like the old school phone operators, like Pennsylvania 252, where they stub in the patch cords to bypass things, which is I think, in part why it really makes a dent, for people who have cognitive impairments is that, when you don't actually have access to those components, you're trying to trigger energy systems so that you can flow in a specific direction.

And in this case, if there's an impairment because of some plaque, or blockage, or simply a lack of connection, you end up with a heightened connectivity. So, what I always tell people is, it generally doesn't happen for the first three weeks. But after about week three, you've got to put yourself under some sort of intense cognitive load.

Because neurons are so resource consumptive, your brain accounts for 2% to 3% of your body mass, but sucks down 20% to 25% of your oxygen. So, they're incredibly resource consumptive. And so, you go through this process called synaptic pruning. So, I can easily outpace BDNF and NGF1, and pump out these new neurons, but your body is not going to let them persist because it's a huge drain on you.

So, it goes in, and does this function called synaptic pruning, unless you actually cement them in place. And so, if you go in, and you put yourself under hardcore a cognitive load, then the neurons actually cement themselves in place, and become more of your available processing resources. So, I always tell people either do something like learn new language, juggling. I did rapping, is one of the things recently. Because I really wanted to put myself under a load that I had never been under. And that was actually surprisingly tricky. You can check out-

Dave:

It's really hard. When I recorded those three rap songs, it's rough. It's just not good.

Ian:

It's difficult. Yeah, I showed you on my Instagram feed. My kids were thinking like, "No way in the world, that is never going to happen." But I was serious, because I hadn't been under that cognitive load. So, I did that. Some of the other things, Dual N-Back is still... I think that's just about the best one that you can do. Because it's such a bear.

And if you up it and do... when you start pushing double digits on that thing, you really are kind of, "argh," cognitively loading yourself, and you feel it. Anybody who hasn't done that, go download Dual N-Back trainer. And you will find your level of frustration go through the roof in about five minutes.

Dave:

I'm glad you mentioned that. In the early days of just writing about stuff, I wrote extensively about Dual N-Back training. I put it into Game Changers. It's one of the most effective kinds of brain training that makes you feel like a failure faster than anything else.

So, if you want to hate yourself, do Dual N-Back training. And you have to push through that. It is about 14 days of just going, how could anyone do this, it's the dumbest thing I've ever heard of, it doesn't work. And then, all the sudden, after about that period of time, and probably less time when you're doing your formulas, all of a sudden, it just works.

And you have to think about it, and you just know, and it's unnatural, to be honest. Just one day, I can do five back without thinking. And if you ever see Bruce Lee played ping pong, it's that same kind of a thing, believe it or not. And I've been doing a lot of ping pong lately. And the only way you can do the

hard shots, you cannot think about it. So, you just have to let the brain and the body do their thing. You just have to step out of the way.

Ian:

Yeah, thinking in person impediment. Yeah.

Dave:

Yeah. First, the knowledge has to be there. And that requires power and all that stuff. And in order to get it from thinking into automated things, I think that's a really neurologically and biologically difficult thing. And if you have the right electron flow, you can do it better. So, that's a prime example.

Ian:

What it actually reminds me of, because I got absolutely wickedly frustrated trying to do that initially. And it reminded me of the state changes. If you look at water, when you're doing a state change in chemistry, you pump a ton of energy in, and it just stays water. And then, it jumps up and boils.

And when you're looking at it, you're like, God bless, I put in so much thermal energy, and everything seems static, but it's building, building, building, building, and then it radically shifts and plateaus at the next level. That was my experience with most of these things is peak frustration, really, really annoying. And then, I would jump up to the next level.

And like you said, suddenly, you have access to a whole new toolkit mentally, that you didn't have before. And it does, it makes a huge difference. Given what I do, you know what I've worked on all the time, because we work on a lot of stuff together. And you have to be thinking at a different level in order to pull all this stuff up.

Because you're taking different components from all sorts of varied fields and inputs, and trying to synthesize them into something that actually has a tangible use, where you can say, "Okay, I'm going to do this from this field and provide this." And if you don't have those sorts of neural connections that are a little bit outsized compared to the norm, it's really tricky to do.

Dave:

You're right. And so, easier learning is part of what happens when you have more energy. It's just how it is. And there's all sorts of impediments, and there's neurotransmitter issues, and insulation on the nerves, myelination issues. But end of the day, you solve all of that with mitochondria that just power through it. So, I just wish I've had known this when I was in college. I probably would have graduated.

Ian:

Yeah. It would have been fantastic. It's like you can get a Ford Fiesta at a 400 horsepower, but you're going to blow the motor, or you can have a very large fancy V12 Mercedes and do the same thing. It is, it's a lot less strain.

Dave:

So, you've really come out with a bunch of new stuff that is noteworthy and new. And the idea of using the type of oil that you're using to target specific types of cells or cell components is really unique in terms of either, we'll call either drug delivery or nutraceutical delivery. And then, guys listening to this going, well, Dave's had a few guests on here talking about it.

What I've learned over the last 25 years of taking supplements and interviewing people in the anti-aging field, and all of the things like that I did before you ever heard of Bulletproof because it didn't exist, is that you could take glutathione way back in the day, and it wouldn't work at all. It would just get digested. And the first guy to make liposomal glutathione was the guy who diagnosed me with having toxic molds.

And he taught me about that delivery system. And ever since then, it's not been about what do you take. It's what form is what you take. And it's the same thing. "Oh, calories are calories." No, it's actually, what was the form of the calories? And how were they delivered? Because calories are one of those three aspects of food.

Ian:

All of my protein is spider venom. Right.

Dave:

Right, exactly. And you think about it, but like, okay, I needed energy. And what you're doing is one level beyond that. Like, okay, so I actually needed less energy, and I could have more of it, not because I ate more food, but because I made better use of the food. That's cool. And then, the other one is what other building blocks did I have?

And what you're doing is you're hacking the building block part of it, and say, "Oh, this kind of fat goes into this kind of cell preferentially. So, let me tag that fat with stuff I want to get there." Thus, you get a neuron formula versus a muscle formula. And then, the third thing that I want to ask you about in the model that I use is don't have toxins in your food. So, what changes or benefits have you seen on detox pathway performance when people are using your C60s?

Ian:

Well, one of the things that's just great about it is it's a lot like activated charcoal. We save the fact that because of its size, after the lipids are processed by your body, you're left with the nanospheres. And there's a great paper on the NIH website that you can check out, but a lot of them, they translocate past the membrane and end up wedging in the mitochondrial membrane, where they buffer oxidative stress.

And that's the special sauce. But what you also have is the detoxification is it's almost like inline dialysis, because the particle size is so small, and it binds, and has such a ridiculous binding surface area, because it's nanoscopic carbon. So, it's going to bind the toxins, which is why in a lot of the studies, you'll see just off the charts renal and hepatic protection.

You literally have to take a mouse with carbon tetrachloride, if you're trying to knock them out, and use two-and-a-quarter times the amount of it that you would normally use because they're on lipoly C60. Because it detoxifies so quickly, because it binds the toxins, and sucks them out. So, it's renally in hepatic li protective.

And so, your liver and your kidneys are just aces because all the toxic load gets bound to these things and excreted. Actually, if I'm taking a lot of this, I'll also take a binder at the same time because you'll start to detoxify your system. And you want to make sure that you're getting the very nanoscopic binding, but you're also getting some macroscopic binding.

And interestingly enough, you mentioned Chris's [Shade] company. I think Quicksilver actually makes a hell of a binder. I would use this for the very fine-tuned detailed work. But I'd also couple it with something that's macroscopic.

Dave:

And again, it follows that basic rule, more energy, better in detoxing, because you have the power to do what the body wants to do anyway. So, if you think about that idea of autophagy, doing intracellular and extracellular cleanup, and suddenly you have enough power to do that, then you will do it. But if you don't have enough power, you won't, which leads me to fasting.

So, if you're going to be fasting, people who follow my work already know, yes, you can have some fat during a fast, and it's not going to change mTOR, it's not going to change insulin, your body will think you're fasting. But would you take any of your formulas during a fast? And if you did, what would happen?

Ian:

I would not. And the reason is, it's part of fasting is to trigger autophagy, your energy systems have to drop to a certain point. So, if you take this, it's going to prolong the amount of time that you have to remain on a fast. So, I would 100% not recommend it as a-

Dave:

You don't have enough metabolic stress when you use this in order to get the benefits of a fast. How cool is that?

Ian:

Yeah.

Dave:

Okay. Now, question from our Upgrade Collective members. Are you still using olive oil for anything?

Ian:

Yeah, absolutely. It's a great base. And the reason it's a good base is our bodies very readily, most of the cells in your body very easily can swap with olive oil. And the oleic acid, it's very easy to get into your system. So, yes, I do.

Dave:

So, we can be fat geeks here.

Ian:

Yeah, we can. One of the things that a lot of people think is that you want a higher polyphenol concentration. And that's actually one of the things I had to go back and modify is you don't. When you're lipolyzing something like this, you actually want to drop your polyphenol count. Because normally, if you're just taking olive oil and ingesting it, you want high polyphenols.

And it gives it a really robust peppery flavor, and changes the color. For this, you actually want the opposite because it impedes the ability to bind. And so, that's one of the things that degrades the bioavailability. So, you actually want to mix and do filtration, so you can get out a lot of polyphenols.

Dave:

So, the olive oil polyphenols.

Ian:

Yeah, exactly.

Dave:

So, one of my favorite olive oil polyphenols, in fact, the reason that olive oil is probably good for you, and I don't eat very much olive oil, because I don't want all the Omega 6s in it, is hydroxytyrosol. And I take a pill every day that gives me about 100 bottles worth of olive oil or something like that.

Ian:

I just drink 100 bottles of olive oil, Dave, it's so much easier.

Dave:

It's no disaster pants going on there. What do you think about, though, using those polyphenols even if they're not part of the delivery system for what you're making? There are a few people out there saying polyphenols are actively bad for you because they stress cells. Most people including me say yes, they stress cells in a good way like exercise, and they feed good gut bacteria. So, they're probably good. But what's your take on that?

Ian:

I'm in the camp of I think it's actually a good thing to substitute or rather to supplement and take some. And the rationale for that is that you're looking at something that is going to upregulate your system, but it's also a hormetic stress response. And you've seen the bio charge stuff that I do with the ozonated oils, the whole crux of that is hormetic stress.

And I don't have a problem putting the body under load, that's why you shouldn't take this during a fast is you want your body at certain points to get a stress load, and to be hit, to think it's having a reaction to something. And if you can use polyphenol groupings to trigger that, great, do it up. It's going to make you stronger on the other side of it.

But one cautionary word about that. And you probably already do this, I would do it on a cyclic basis, because that's how I do it. I don't just constantly do the same load every day because your body is so brilliantly adaptive that if you do that, it ceases to be a hormetic stress, and just becomes something that you're adapted to. And your body will down regulate other components to compensate.

Dave:

That's why going for a four-mile run every day doesn't really work that well. You should do some sprint, rest, sprint, rest, seriously. It's all about the slope of the curve, not about constant state for almost anything that you want to-

Ian:

Heart rate variability. Yeah. If you have zero heart rate variability, you're not doing so well. There needs to be a dynamism to it.

Dave:

Okay. A couple of questions from the... and by the way, if you're listeners is going Dave said, what does he take? It's called hydroxytyrosol. H-Y-D-R-O-X-Y-T-Y-R-O-S-I... tyrosol, O-L, there. I typed it for Upgrade Collective. And we can probably put it on the YouTube video that'll come out with this.

So, here's the questions from people. And I already know the answer, but I want to hear you say it. If I wanted to put the stuff in my coffee, which is hot and blend it up, which is mechanical stuff, what would happen to these precious molecules that you make?

Ian:

Well, since they're completely molecularly bound to the oil, it would get distributed throughout the same way that... OH, I don't know, say you'd have in a Bulletproof Coffee or whatever else you're doing. I use it, and we're friends. So, I use it exactly that way and have-

Dave:

You don't worry about the heat messing with it? Because as far as I understand, I think when we talked real early on, you were a little concerned about the heat.

Ian:

I was. But I did studies, and we showed that there was no denaturation of anything until you went past 80C. So, it's-

Dave:

80 degrees centigrade is way hotter than your coffee is going to be. So, then, you could toss these into your coffee, is there any benefit to doing that, because you're getting a little bit more micelles or something, or should you just drink it?

Ian:

Actually, if you toss it in, yeah, the micellular formulation is great, because it goes in and it's more readily available. But the thing that's a big benefit, I actually do it with both my coffee and tea is it emulsifies the stuff, so it's so much easier to get down. Because I still, with the different additives in here, like the resveratrol, and the PQQ, and the CoQ10, and NMN, because the concentrations are pretty chunky.

But that's what I needed to get to elicit a very specific biological response. I don't like the taste. Actually, the taste of the neural serum is great, it's fine, no problem. But the Olympic serum, I'm still not a big fan of the taste. So, I always put it in either coffee or tea, just so that I can get the heat to break everything down and make it move. And then, I always chase it very quickly with something to wash away the flavor.

So, really, it's a convenience thing. That's why I do it is it's quick and easy, because I don't want to suck down two teaspoons of an oil with a lot of particulates in it that tastes not so great.

Dave:

So, you do put it in your coffee now and blended it?

Ian:

Yeah.

Dave:

Sweet. I would have not thought that the bucky balls would stay suspended. So, there you go, guys, you can do that, which is cool. And what about refrigeration for everything?

Ian:

You don't need to refrigerate it. The one thing-

Dave:

Which is also a new innovation, you just have to store it in the freezer, the stuff that I would get years ago because the oils are so unstable. This is about purity of processing and understanding just following the science over-

Ian:

Yeah, it's very stabilized. The one thing that I always tell people, and it's literally on the bottle is keep it out of the light, because the components that make it tremendously anti-oxidative, make it pump out a huge amount of singlet oxygen. And that's something that will shred a cell membrane like nobody's business.

So, that study that was published recently that said, "Oh, it's got all these damaging opponents." Very easy to do that study, if you just expose it to a lot of light when you're mixing it. So, you have to take the preparation properly.

Dave:

Okay. So, you want to store it in the dark, I would probably start in the fridge, unless it's going to harden a little bit depending on the oil.

Ian:

I wouldn't even store in the fridge, man, I really don't. No, I don't. I actually just store it in the pantry or the cabinet by all of my stuff for coffee. So, that's it.

Dave:

All right. It's interesting. There's a lot going on in this space. And if you guys think about this, we discovered that you could do this to carbon in 1986. And that's whatever that is about 40 years ago, 30 something years ago.

Ian:

Not that-

Dave:

And then-

Ian:

Yeah.

Dave:

Then, that was just to figure out that carbon could do this, not that they did it biologically, just that you could make a little sphere like this out of it. And then, we're all the way now within your lifetime, most likely, or maybe right before your lifetime, but in a very short period of human history going, "Oh, look, here's what you can do to neurons with it. Here's what you can do the muscle tissue with it. Here's how to get it into the brain."

And this is just stupidly fast, stupidly fast progress. Now, let me ask you this, Ian. If you wanted to do the research you're doing now in the lab you set up for yourself without any external funding, how much would it have cost you to do what you're doing now 20 years ago?

Ian:

Would not have been possible. The numbers, not by myself, at least. It would have been tens of millions of dollars to pull it off. The technological pace, increasing the way it has, has made so much of the stuff that I'm doing entirely plausible and doable. I would have had to have, I don't know, 20 to 50 million bucks to pull this off 20 years ago. It was untenable, would not have worked.

Dave:

Yeah. And so, you're listening to this, especially just going in your career. You've got to think about this, the communications that we're doing now, I was involved in the rollout of the first corporate video over IP conferencing at a company called 3Com.

The first time we were doing a two-way thing without having to do it over phone lines and crap like that. And now, we can do it from our phones while we're driving. And the speed of change is just amazing. And just what I've seen with your work over the past five years, it's evolved really rapidly.

Dave:

And when I see the rate of progress of what you've done with targeting molecules to muscles versus nerves, I'm just all excited.

The anti-aging thing is totally real. Having more power than you're supposed to in your cells, naturally, it's real. And it's only getting faster. So, I get all worked up when I think about this stuff. So, thanks for continuing to do the weird and neat stuff. And I got a lot of questions from the [Upgrade] Collective, are you ready for some questions?

Ian:

Yeah, bring it. Let's do it.

Dave:

All right. Let's see. I'm seeing a ton of really good questions from, where did he go here? It was from Joe, I think. Yeah, Joe, why don't we take your question first?

Joe:

The dose response curve, how steep is that? Is it a shallow water or is it one of those big S curves with this-

Ian:

It's a pretty linear curve. It doesn't go hyperbolic. When you guys look at the paper that was published on it, you can actually look at the dose response curve, but it's relatively linear. It doesn't have that hyperbolic swoop towards the end.

Joe:

Do you try that with mouse models or heart failure? Because heart failure is huge out there. And the problem is, is people's hearts just don't squeeze efficiently. So, this would be great to two or three extra heart squeeze.

Ian:

Well, there's actually some work that some guys at Baylor were doing with fullerenes. But they were primarily focused on cardiac reperfusion injury after you had an infarction. So, after there was a heart attack, one of the big issues is that everything stops moving. But then when it comes back in, when your heart starts moving, you get this oxidative load that comes in, and scours the tissue and damages it.

And this is actually a buffer for that. But in terms of the actual force output from the musculature in the heart, I don't know that there's been any study on that. I haven't seen it, and I personally haven't done yet, done that study.

Joe:

I think your product probably be very good at that.

Ian:

Actually, that's an interesting approach on it. I'd actually love to do a study like that. There again, it's a matter of having the time to actually do those studies. Because it takes a fair amount to really get a good study done to any degree of certainty. It takes a lot of focus.

Joe:

Well, we should talk. That's what I do.

Ian:

Okay. Yeah. Actually, we should, then

Dave:

Well, we'll connect you guys after the show.

Ian:

That's great.

Dave:

One of the many benefits of being in The Upgrade Collective is the ability to ask questions like that, hook up with the right guests. So, if you haven't checked out The Upgrade Collective, our [upgradecollective.com](http://upgradecollective.com), this is a really cool group, and you get all my courses and everything. So, it's worth your time and energy. All right, let's do one more question from Jay.

Jay:

I see you've been doing some interesting research on hair growth formulas. Wondered if you could give us more details and always my big question, can I get it in Canada?

Ian:

Yes, you can get it in Canada.

Jay:

I've tried, and it's not an option. Your pull-down menu only says USA.

Ian:

Yeah. I think they're working through that. Because unfortunately, I believe the serum was labeled as a pseudo pharmaceutical, which is, I think, a euphemism for, "Oh, my God, it's actually working," which is a problem for some people. So, yeah, you can and if not, presently, shortly, you'll be able to for certain, because initially, you were able to.

And then, we've had to kind of shift through a lot of things to get it back in a position where it's workable. So, at some point in the near future, you should be able to. But if not, sorry for the inconvenience, but it's coming. On the note of the hair loss and hair regrowth, it's the same basic function. Instead of looking at conversions of testosterone, the dihydrotestosterone thing is it's definitively a component, but in my experience, it's not actually the causal thing.

And so, what I did that was different with this is, I looked at the results that I was getting before using dimethyl sulfoxide to punch through cells. And I thought that's good, and it definitively worked. But if I could change that, and use something that was a noncomedogenic penetrant, just so it's not oily and greasy.

And use a single component penetrant to get that into the cells, and then you use peptides to upregulate intracellular function, in addition to dropping out inflammatory response, and upregulating mitochondria. Then, you'd have the synergistic potential. And Dave, I know you're super familiar with all this stuff, because we've talked about it before.

It's the same peptides that personally, I think, should be classed as bioregulating peptides like cupric peptides, GHK-Cu, and a couple of the others. When you use those things, and you get them delivered into the cells, it's literally like magic.

Dave:

Again, it comes down to delivery systems, and it's funny. Now, what industry use liposomes first?

Ian:

That's a good question. I don't know.

Dave:

The pharmaceutical industry invented liposomes as a delivery system. They really did. The first drugs, "Oh, this one gets destroyed in the stomach. Let's wrap it in fat and make it get absorbed." So, then we started using those in the nutraceutical industry. And it turns out what part of the body makes something similar to liposomes called micelles? That's what bile does in the gut.

It makes micelles because you need micelles or liposomes to get through the lining of the gut.

Dave:

All right, there's one more question coming in from Larry. Larry, what do you have to say?

Larry:

I just wanted to ask if this formulation is good for pets?

Ian:

Yeah. I actually have one that I'm redoing and tailoring specifically for pets with the upgraded bioavailability. So, I personally, yes, it works like a champ. And I have a few friends that are using it for their dogs, but I would just give it two months or so, and wait. You can certainly try it though. It's surprising how quickly it works.

Just when you drop out the inflammatory response with the stuff that I used to do, just taking out the inflammation is phenomenal. You can see a big shift in a dog, and cat, and horses in the way they move really quickly. But when you drop out the inflammation, and you also additively upregulate the energy cycle, it's ridiculous.

That's why I'd say dogs and cats don't have a placebo effect. So, it's cool, because you know it's working, and you can see it very quickly. But with this, because of the rapid shift in the system, just take it yourself. You will 100% see it in just a matter of weeks.

Dave:

I would feel pretty safe giving the MCT Rx to my dog in limited doses. Except, I don't have a dog anymore.

Ian:

RIP, Merlin.

Dave:

Exactly. But it seems like we know because I did a whole podcast about this years ago with a veterinary scientist about how good MCTs are for dogs, and cats, and probably not for ruminants. But even for pigs, my pigs get MCT oil, and it totally changes the composition of their muscle and fat ratio. I didn't get a lot of it because it's expensive, but they get a little bit. Even with that one, which doesn't have all the other compounds in it, it's just C8 with Lipofullerenes, you wouldn't feel comfortable?

Ian:

Oh, no, no, no. I'd feel comfortable. But I'd just say give it two months until I actually have the formula dialed in for animals. Yeah, it's coming. We already have the packaging, the labeling, everything like that. It's just not up yet. I'm still doing a little bit more testing.

Dave:

Okay. You guys can wait two months. Beautiful. Well, this has been a fascinating look under the hood at what happens at the very cutting edge of making interesting stuff that you can't buy anywhere else. And so, you guys know, that's my recipe for being an entrepreneur. That's my recipe for making positive change in the world.

And then, it's my job on this show, it's my job in The Upgrade Collective to curate the stuff, kick out the stuff that doesn't have a high enough return on investment for it to be worth your time.

So, I'm doing my best here to bring you the thinking, the cool stuff, and the stuff that I either do use, or would use, or will be using because I think it's worth it.

And I would love it if you took the time. If you see something like that, go to the [daveasprey.com/podcast](https://daveasprey.com/podcast) page, and leave a comment, tell me whether you like it. But more importantly, if there's something that I need to know about that I haven't yet seen, send it my way, I'll check it out. And if it's the one in 100 that's worth it, then I'll end up having it on the show. So, you've been on before, I like your work, you think about cool stuff. So, thank you, man.

Ian:

Thanks, Dave. My pleasure.

Dave:

As always, you have to give our listeners a discount, [wizardsciences.com](https://wizardsciences.com), use code Dave to receive a discount. I would suggest try the brain stuff. That's like it's going to be really cool.

Ian:

Yeah, it makes a huge difference.

Dave:

All right, and next time I have you on the show, for your once every 250 episode-

Ian:

Do I get the leather jacket?

Dave:

I want you to have a leather jacket and Einstein hair just to-

Ian:

I see it's going to be like SNL's Five-Timers Club. I'm expecting to get a robe so I can just dial it in.

Dave:

Nice. On that note, thanks for continuing to just make cool stuff. This is what the world means. We've got good stuff happening everywhere. And if that little rant about how far we've come and how easy it was, even though it was still hard for Ian to do this now versus a while ago, put on your five-year half from now, and imagine what you're going to be able to do. It's going to be awesome, as long as you're allowed to do it. Let's make sure that happens. See you all next time.